The claimed invention is:

1. A chemical vapor deposition process for the preparation of a single-wall carbon nanotube, comprising:

providing methane gas and a supported iron-containing catalyst to a chemical vapor deposition chamber, and

decomposing the methane in the presence of the supported iron-containing catalyst, under a sufficient gas pressure and for a time sufficient, to grow single-wall carbon nanotubes at a temperature from about 670°C to about 800°C.

2. A process of claim 1, wherein said temperature is from about 670°C to about 750°C.

3. A process of claim 1, wherein said temperature is from about 670°C to about 700°C.

4. A process of claim 1, wherein said supported iron-containing catalyst is selected from the group consisting of: Al_2O_3/Fe/Mo/Co, Al_2O_3/ Fe/Mo, Al_2O_3/Fe/Co, Al_2O_3/Fe, and mixtures thereof.

5. A process of claim 4, wherein the supported iron-containing catalyst is Al_2O_3/Fe/Mo catalyst, and wherein the catalyst has a ratio of Al_2O_3:Fe:Mo of about (10-20) : 1 : $^1/_3$.

6. A process of claim 1, wherein said methane gas is methane or a mixture of methane and a carrier gas.

7. A process of claim 6, wherein said carrier gas is selected from the group consisting of: argon, nitrogen, helium, and mixtures thereof.

8. A process of claim 7, wherein said methane gas and said carrier gas are used in a ratio of about 1:1 by volume to about 1:10 by volume.

9. A chemical vapor deposition process for the preparation of single-wall carbon nanotubes, comprising:

providing methane gas and an Al_2O_3/Fe/Mo catalyst to a chemical vapor deposition chamber, and

decomposing the methane gas in the presence of the Al_2O_3/Fe/Mo catalyst, under a sufficient gas pressure and for a time sufficient, to grow single-wall carbon nanotubes at a temperature from about 670°C to about 800°C,

wherein said single-wall carbon nanotubes have a diameter distribution ranging from about 0.7 nm to about 2.1 nm.

10. A process of claim 9, wherein the Al_2O_3/Fe/Mo catalyst has a ratio of Al_2O_3:Fe:Mo of about (10-20) : 1 : $^1/_3$.

11. A process of claim 9, wherein said temperature is from about 670 °C to about 750°C.

12. A process of claim 9, wherein said temperature is from about 670°C to about 700°C.

13. A chemical vapor deposition process for the preparation of single-wall carbon nanotubes, comprising:

providing methane gas and an Al_2O_3/Fe/Co/Mo catalyst to a chemical vapor deposition chamber, and

decomposing the methane gas in the presence of the Al_2O_3/Fe/Co/Mo catalyst, under a sufficient gas pressure and for a time sufficient, to grow single-wall carbon nanotubes at a temperature from about 680°C to about 800°C

wherein said single-wall carbon nanotubes have a diameter distribution ranging from about 0.7 nm to about 2.1 nm.

14. A process of claim 13, wherein the Al_2O_3/Fe/Co/Mo catalyst has a ratio of Al_2O_3:Fe:Co:Mo of about (10-20) : 1 : 0.23 : $^1/_6$.

15. A process of claim 13, wherein the Al_2O_3/Fe/Co/Mo catalyst has a ratio of Al_2O_3:Fe:Co:Mo of about (10-20) : 1 : 0.23 : $^1/_{18}$.

16. A process of claim 13, wherein the Al_2O_3/Fe/Co/Mo catalyst has a ratio of Al_2O_3:Fe:Co:Mo of about (10-20) : 1 : 0.23 : $^1/_{36}$.

17. A process of claim 13, wherein said temperature is from about 680 °C to about 750°C.

18. A process of claim 13, wherein said temperature is from about 680°C to about 700°C.